AMENDED CLAIMS
[received by the International Office on July 19, 2005 (07/09/05)
original claims 1-20 replaced by new claims 1-18 (4 pages)]

Claims

1. An optical system for generating an illuminated pattern (01) on a surface (02) of a material (03) which is moved relative to the pattern (01), wherein an illumination arrangement (06) having several light sources (07), which are operated in a pulsed manner by a control device (23), emits light for generating the pattern (01), wherein a detection device (08) detects light emitted by the light sources (07) of the illumination arrangement (06), wherein the control device (23) controls an individual light source (07) or a group of light sources (07), wherein the length of a switched-on time (t3) of the at least one light source (07) is synchronized with length of an exposure time (t1) of the detection device (08), wherein the detection device (08) has a chronological behavior consisting of the length of the exposure time (t1) and an off time (t2) immediately following the length of the exposure time (t1), characterized in that the off time (t2) of the detection device (08) is set as a function of a variable transport speed of the moving material (03), wherein the at least one light source (07) of the illumination arrangement (08) has a chronological behavior consisting of the length of switched-on time (t3) and a delay time (t4) which immediately precedes the length of the switched-on time (t3), wherein the control device sets a sum consisting of a delay time (t4) and the length of a switched-on time (t3) of the light source (07) to be of shorter

duration than the length of the exposure time (t1) of the detection device (08) the length of a switched-on time (t3) of the light source (07), wherein the length of switched-on time (t3) of the light source (07) is arranged within the length of the exposure time (t1) of the detection device (08).

2. The optical system in accordance with claim 1, characterized in that the control device (23) switches the light source (07) on simultaneously with the length of the exposure time (t1) of the detection device (08).

3. The optical system in accordance with claim 1, characterized in that an electrical current source (22), which is controlled by the control device (23), is assigned to an individual light source (07) or to a group of light sources (07).

4. The optical system in accordance with claim 1, characterized in that the detection device (08) is embodied as a line-scanning camera (08).

5. The optical system in accordance with claim 1, characterized in that several groups of light sources (07) are provided in the illumination arrangement (08).

6. The optical system in accordance with claim 5, characterized in that at least one electrical current source (22), which is controlled by the control device (23), is respectively assigned to the groups of several light sources (07).

7. The optical system in accordance with claim 6, characterized in that the electrical current source (22) is embodied as a constant electrical current source (22).

8. The optical system in accordance with claim 1, characterized in that the illumination arrangement (06) creates an illuminated strip (01) of a length (L01) and a width (B01) on the surface (02) of the moving material (03) as the illuminated pattern (01).

9. The optical system in accordance with claim 1, characterized in that the light sources (07) are arranged in the shape of lines in the illumination arrangement (06), by means of which a profile of the amount of light is produced by controlling the light sources (07) over the length of their arrangement in the shape of lines.

10. The optical system in accordance with claim 9,

characterized in that the profile of the amount of light has been set along the length (L01) of the illuminated strip (01).

11. The optical system in accordance with claim 1, characterized in that the control device (23) adapts the switched-on length of time (t3) to different optical properties of the material (03) to be illuminated.

12. The optical system in accordance with claim 1, characterized in that a light sensor (37), which is connected with the control device (23), measures the amount of light emitted by the light sources (07).

13. The optical system in accordance with claim 12, characterized in that the control device (23) matches the switched-on length of time (t3) of the light sources (07) to their degradation behavior by means of a measuring signal from the light sensor (37).

14. The optical system in accordance with claim 12, characterized in that the control device (23) compensates a reduction of the amount of light emitted by the light sensors (07) as a result of their aging by means of the measuring signal from the light sensor (37).

15. The optical system in accordance with claim 1, characterized in that the detection device (08) has a plurality of

detectors (09), which are arranged next to each other in the shape of lines.

16. The optical system in accordance with claim 15, characterized in that the detectors (09), which are arranged next to each other in the shape of lines, are arranged parallel in respect to the length (L01) of the illuminated strip (01) and/or parallel in respect to a width (B03) of the material (03).

17. The optical system in accordance with claim 15, characterized in that a spacing existing between lines of detectors (09) arranged in the shape of lines and the movement direction (04) of the material (03) is orthogonal.

18. The optical system in accordance with claim 1, characterized in that the at least one light source (07) of the illumination arrangement (06) emits a constant amount of light.